

Hazardous Substances Emergency Events Surveillance

1998 Annual Report*

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The Hazardous Substances Emergency Events Surveillance (HSEES) program, established by the federal Agency for Toxic Substances and Disease Registry (ATSDR) in 1990, collects information on the direct public health impact of emergency events involving hazardous substances. Missouri's HSEES program receives notifications of incidents involving hazardous substances from several sources, including the Missouri Department of Natural Resources' Environmental Services Program, the United States Coast Guard's National Response Center, the federal Department of Transportation's Hazardous Materials Information System, the Missouri State Highway Patrol, and the media. Information about specific hazardous substance emergency events is obtained from the Missouri departments of Agriculture, Conservation, Public Safety, and Highway and Transportation, regional environmental agencies, local public health agencies, responders, incident commanders, responsible parties, facility and transportation managers, hospitals, employees, witnesses, and victims.

The Missouri HSEES program has completed its fifth year of data collection. As the program continues, new notification and data sources are explored, and information is shared and analyzed to determine the public health impact of emergency events involving the release of hazardous substances in the state. All Missouri HSEES data are transmitted to ATSDR for analysis with the data collected from the other 13 participating states. Personal/company identifiers are

Case Definition for Hazardous Substance Release

A hazardous substance release is entered in the HSEES system if it meets the following criteria:

1. An uncontrolled or illegal release or threatened release of one or more hazardous substances; and
2. The substances that are actually released or threatened to be released include ALL hazardous substances except petroleum products; and
3. The quantity of the hazardous substances that are released, or are threatened to be released, need (or would need) to be removed, cleaned up, or neutralized according to federal, state or local law; or
4. Only a threatened release of hazardous substances exists, but this threat leads to an action such as an evacuation that can potentially impact on the health of employees, responders or the general public. This action makes the event eligible for inclusion into the surveillance system even though the hazardous substances are not released.

not transmitted to, or maintained by, ATSDR to protect the confidentiality of program participants.

Because the intent of the HSEES program is to reduce the morbidity and mortality related to hazardous substances emergency events, it is important that the public, emergency responders, employees and industries receive feedback from the program concerning case investigations. In those cases where development of intervention strategies might prevent similar future incidents, specific summary investigation reports are prepared and distributed to the community involved. When appro-

priate, health education programs to promote prevention strategies are conducted for the affected industry, local emergency planning committees, emergency responders, etc.

Analysis of Data on Hazardous Substances Emergency Events

In calendar year 1998, there were 196 incidents that met the hazardous substances emergency event case definition (see sidebar). Of this total, 192 events included actual releases of hazardous substances. Actual (not threatened) releases occurred in 161 (82.1%) events. Thirty-one (15.8%) involved both actual and threatened substance releases, and four events (2.0%) involved only threatened releases.

* Data provided in this report for 1998 are preliminary. This report was supported by funds from the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) trust fund provided to the Missouri Department of Health under Cooperative Agreement Number U61/ATU780955-02 from the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services.

Of the 192 events involving an actual hazardous substance release, the majority (187, or 97.4%) involved the release of only one substance and five (2.6%) involved the release of two substances. The most commonly released substance was ammonia and ammonia compounds, occurring in 35 (18.2%) events. Other commonly released substances and number of occurrences were acids or mixtures containing acids (30, or 15.6%) and mercury (12, or 6.3%).

Events were scattered throughout the state, occurring in 58 counties and the City of St. Louis. This represents 51.3 percent of the counties in the state. Events occurred primarily in counties where there are larger cities, interstate highways and large manufacturing or mining facilities. See Figure 1 for the number of events occurring in each county.

Of the total 196 events, 170 (86.7%) occurred on weekdays and 26 (13.3%) occurred on weekends. Actual number of events occurring by day of the week are: Sunday (13), Monday (39), Tuesday (34), Wednesday (42), Thursday (30), Friday (25), and Saturday (13).

Evacuations were ordered by an official in 23 (11.7%) events. Eighteen evacuations involved a total of 4,761 people. The number of people evacuated in five events is unknown. Thirteen evacuations involved a building or an affected part of a building, five evacuations were within a specified radius of a release, three evacuations were downwind, one evacuation was both within a specified radius and downwind, and one evacuation was made with no defined criteria for the evacuated area. One event, involving a tire fire and the release of an unknown quantity of magnesium, had the largest number of people evacuated. The close proximity of 3,000 gallons of propane and a 30,000 gallon tank of methanol, as well as air pollution from the burning tires, prompted the evacuation of approximately 3,000 people within a one-mile radius.

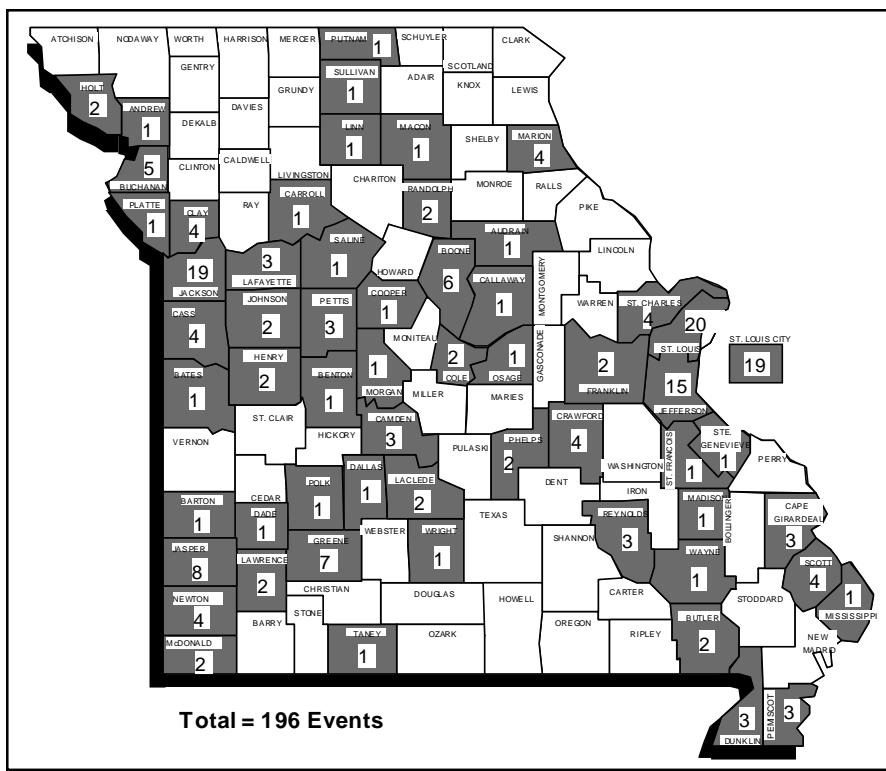
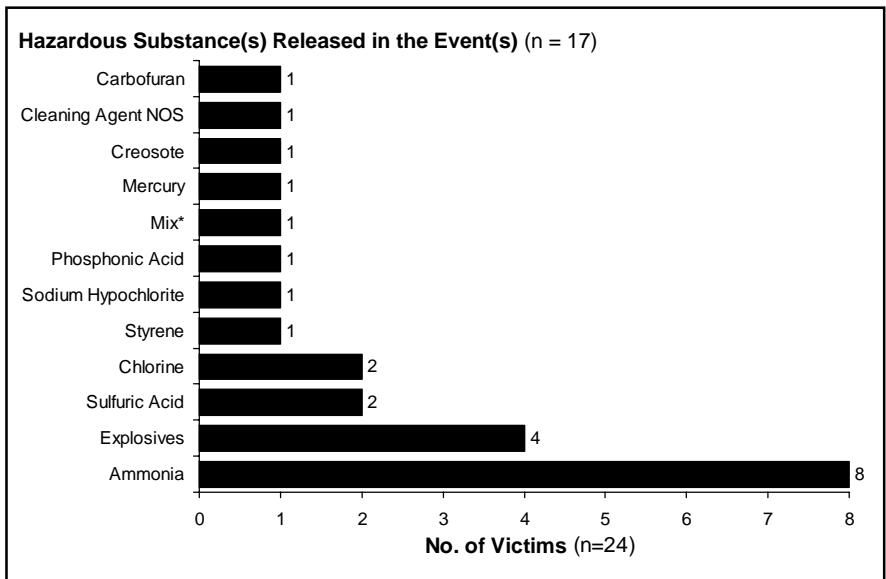


Figure 1. Location of non-petroleum hazardous substances emergency events by county, Missouri, 1998.



*Mix=Alkyl Polyethoxy/HCL/NaOH/Oxalic Acid/Tetrasodium Pyrophosphate

Figure 2. Number of victims by hazardous substance released, Missouri HSEES, 1998.

One hundred forty-five (74.0%) of the releases occurred in fixed facilities while 51 releases (26.0%) were transportation-related. Most of the fixed-facility releases (64, or 44.1%) were due to equipment failure, 39 (26.9%) were due to operator error, four (2.8%) were due

to improper filling, overfill, and one (0.7%) was due to improper mixing of substances. Other factors contributed to releases in 26 (17.9%) events, and in the remaining 11 (7.6%) events, the cause or contributing factors were

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unknown. Of the 51 transportation releases, 42 (82.4%) were ground transportation and nine were rail transportation. Fixed facility events resulted in 21 (87.5%) victims and transportation events resulted in three (12.5%) victims, with a total of 24 victims resulting from 17 events.

Seventeen (8.7%) releases involving 12 different substances (see Figure 2 on page 23) resulted in 24 persons with single or multiple injuries (40 total injuries). The largest number of victims associated with a release was four. The most common types of injuries reported were respiratory irritation (10), trauma (6), chemical burns (5), and eye irritation (4). Other injuries experienced included nausea/vomiting, thermal burns, headache, dizziness, chest pain, shortness of breath and elevated blood mercury level. See Figure 3.

Of the 24 victims, twenty were employees, one was a responder, one was a member of the general public, and two were professional fire fighters.

One person was treated at the scene of the event, 14 were treated at but not admitted to a hospital, seven were admitted to a hospital, and two people died.

The two deaths occurred at fixed facilities. An explosion of an unknown quantity of detonators at an explosive incinerator resulted in four employee victims, including one death. In a separate event, a death occurred when an employee mistakenly released a pressurized door of a wood treatment vessel. While only a small quantity of creosote was released, the trauma of the door striking another employee resulted in the death.

Reporting Events

The Missouri HSEES program is indebted to the Missouri Department of Natural Resources' Environmental Services Program for helping to investigate these hazardous substances

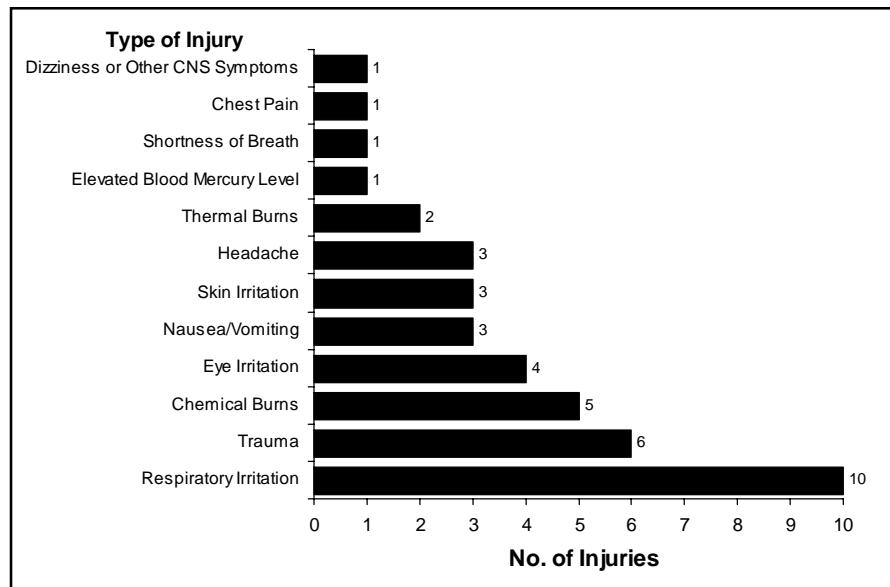


Figure 3. Number of injuries reported by type, Missouri HSEES, 1998.

emergency events. The program relies heavily on the Department of Natural Resources for notification of releases and frequently contacts them for circumstances surrounding a release.